

What is claimed is:

1. A solar concentrator system comprising:
  - at least one solar cell that includes photovoltaic material; and
  - at least one optical element for at least partially focusing incident solar radiation onto the photovoltaic material, said optical element having a plurality of lenses superimposed on the surface of a larger lens.
2. The solar concentrator system according to claim 1 further including a housing having an opening for receiving incident solar radiation, the housing supporting the at least one optical element adjacent the opening and the photovoltaic material.
3. The solar concentrator system according to claim 1 further including directing means for directing at least partially focused radiation emerging from the at least one optical element generally towards the location of the photovoltaic material.
4. The solar concentrator system according to claim 3 wherein the directing means includes at least one mirror.
5. The solar concentrator system according to claim 3 wherein the directing means includes at least one prism.

6. The solar concentrator system according to claim 1 including a plurality of solar cells.

7. The solar concentrator system according to claim 1, comprising a plurality of optical elements.

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8. The solar concentrator system according to claim 1, wherein the at least one optical element comprises at least one Fresnel lens.

9. A solar concentrator comprising:  
an array of solar cell elements that each include photovoltaic material; and  
10 an array of optical elements to at least partially focus incident solar radiation onto the photovoltaic material of at least one of the solar cell elements in the array of solar cell elements, each of the optical elements having a plurality of lenses superimposed on the surface of a larger lens.

10. The solar concentrator system according to claim 9  
15 further including a housing having an opening for receiving incident solar radiation, the housing supporting the array of optical elements adjacent the opening and the array of solar cells.

11. The solar concentrator system according to claim 9  
further including directing means for directing at least partially focused radiation  
emerging from the array of optical elements generally towards the location of the array  
of solar cells.

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12. The solar concentrator system according to claim 11 wherein the  
directing means includes at least one mirror.

13. The solar concentrator system according to claim 11 wherein the  
10 directing means includes at least one prism.

14. The solar concentrator system according to claim 9, wherein the at least  
one optical element in the array of optical elements comprises at least one Fresnel  
lens.